

Non-carious cervical lesions

Types of TOOTH LOSS

- Abrasion lesions
- Erosion lesions
- Abfraction lesions
- Attrition

Etiology of noncarious cervical lesions

Destruction of the dental tissues(enamel, dentin, cementum) that occur as a result of physical loss, chemical dissolution, and/or multifactorial etiology

1-Abrasion lesions

V-shaped lesions due to Gradual loss of tooth substance caused by friction between teeth & other materials e.g. toothbrush ,toothpicks, pipes

Etiology of abrasion:

- **Faulty oral hygiene** practice e.g. horizontal brushing technique
- **Oral hygiene products** may be contributing factors
 - * hardness , shape & flexibility of tooth brush
 - * pH & grittiness of Tooth paste
- improper Use of **toothpicks** , **chewing on fingernails**, **pencils** or **other objects**

Note

- Dentin is abraded 25 faster than enamel
- While cementum shows an abrasion rate 35 times higher than enamel

So

it is more common in older age..... ..why ??

clinical features:

- increased **tooth sensitivity** to heat & cold
- **Canines & premolars** are most commonly affected
- Lesion has a **sharply defined edge &**
- **hard smooth surface** with **burnished appearance..why ???**
- usually **unilateral in nature**
- **Affecting the facial surface more** than the lingual surface
- **Lesion may show varying grades of depth.....**
 - *** shallow- deep to pulp exposure**

2. Erosion lesions

Saucer-shaped lesion due to Gradual loss of tooth substance caused by:

- **Chemical dissolution (e.g. acids)**
- **Motivated by mechanical action**
(Chemico- mechanical process)

Multiple teeth are affected
More common in upper
anterior teeth

Characteristics :

- Lesion is **sensitive** in its initial stage & decreasing gradually due to deposition of secondary dentin
- Lesion is **smooth , highly polished** depression.....exposing dentin or may involve enamel only
- **Lesion edges is smooth** without demarcation with external tooth surface
- The adjacent **gingival tissues** are **healthy**
- **Slow rate** of advancement
- It may be extended **up to** exposing the pulp

How does it happen

Enamel is 97 % inorganic It is soluble in acidic medium
Solubility of enamel is pH dependent Its critical pH of is about 5.5 . Any acidic pH that comes in contact with enamel for a long time will cause its dissolution $\Longrightarrow$ Erosion

Etiology of Erosion

Acidic theory

A. Intrinsic (due to endogenous acids)

B. Extrinsic occurs due to acids from:

- Environmental origin
- Dietary origin
- Medical origin

Examples of acids Sources :

- Habitual drinking **acidic beverages** drinking sodas, or certain tea (pH 2-3)
- Excessive consumption of **citrus fruits** such as lemon juice , grapefruit & grapes (some persons are habitual lemon suckers)
- Prolonged contact with **candy & lozenges , sour drops & mint** of low pH
- Industrial atmospheric pollution (industrial acids from fumes, vapors, droplets & aerosol)...
- Habitual regurgitation of gastric content usually on the lingual surface of anterior teeth

3-Abfraction

Cervical lesions caused by:

- **Abnormal occlusal loading**
- The teeth experience **microscopic levels of bending at the CEJ** $\Longrightarrow$ concentration of stress & **micro-crack formation**
- more susceptible to mineral loss

Clinical features of abfraction lesions

When combined with tooth brushing

- **Wedge-shaped non-carious defects that looks like abrasion lesions**
- The breakdown is dependent on the **magnitude , duration , frequency & location of the force**
- Usually a single tooth is involved
- Seen as **sharply defined wedge shaped** depression
- in **early stages**, the lesion appears as **minor irregular cracks** or fracture lines on **enamel surface**

Management of non-carious cervical lesions

**For treatment of cervical lesions it is important
to know**

**Etiology & progression of the lesion through
careful history & accurate diagnosis**

History of the patient

The following thing should be kept in mind:

- Dietary habits of the patient : over consumption of citrus fruits , aerated drinks , pickled foods , effervescent vitamin C
- Occupation exposure to acidic environment
- Gastric symptoms
- Brushing habits
- Abnormal habits

Clinical examination

- Clinical appearance of the lesion
- Look for any abnormal signs of traumatic occlusion, abnormal tooth wear , cross bite

The line of treatment depends on the removal of the cause

Three lines of treatment are available:

- Preventive treatment
- Conservative treatment
- Restorative treatment

Factors that determines the line of treatment:

- patient's complain
- Degree of sensitivity (mild ,moderate or severe)s
- Esthetic needs
- Amount of loss of tooth structure

1.Preventive management

The primary objective is removal of the etiological factors by

- Proper tooth brushing
- using soft bristle toothbrush with less abrasive dentifrice
- Correct occlusal disharmony
- Restrict acidic & acid producing diet
- Topical fluoride application
- Food with Ca & phosphate & buffering food as milk & cheese
- Use orthodontic appliances to prevent bruxism & clenching

**Preventive treatment may be beneficial with lesions
in their early stages**

2. Conservative management

In Small lesions **sensitive** to thermal changes ,sweets.....

What is the cause of sensitivity....???

- **Dentin is exposed**
- **Opened Dentinal Tubules**
- **Stimulus**
- **Fluid movement**
- **Painful response & Sensitivity**

Rules to treat dentin sensitivity...

❖ Plug the dentinal tubules
preventing fluid flow

or

❖ Desensitize the nerve, making it
less responsive to stimulation

Different Methods to treat Dentin Sensitivity.....

1. The use of **bonding agents**
2. Blocking of D.T by **ion precipitation**
3. Coagulation of nerve endings
4. The use of **Oxalate solutions**
5. The use of **stannous or sodium fluoride**
6. **Laser** application (occlusion & narrowing of dentinal tubules)
7. **Iontophoresis (influencing ionic motion by an electric current)**
8. Potassium nitrate **dentifrice** or gel (desensitize the nerve)
9. Fluoride Varnishes

3. Restorative treatment

If the lesion is extensive or not responding to the preventive & conservative treatment

it can be restored using either of the restorative material used for carious cervical lesions i.e. composite, glass ionomer, resin modified GI, amalgam, or direct gold filling

Restoration is done:

- To prevent further tooth loss
- To treatment of hypersensitivity
- To restore function
- To restore esthetics
- To protect the pulp
- To maintain the gingival health
- To prevent caries

Composite ,glass ionomer & resin modified glass ionomer are chosen because:

- They require minimum tooth preparation
- Achieve retention by bonding with tooth tissue
- offers good esthetics

Tooth preparation

- Requires **only roughening** of the internal walls with diamond stone
- **Beveling** or flaring all enamel margins if present
- **Never bevel cervical wall...why??**
- **Sometimes** placing a retention groove in non-enamel area
-

But if there is pulpal involvement

Root canal is indicated first

What is the best material for abrasion erosion lesions....??

Why???

- Hybrid composite
- Nano composite

In case of Abfraction lesions??

- Microfilled composite
- Flowable composite
- Compomers

Why.....???